

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

BRODEUR et al

Atty. Ref.: 11-893

Serial No. 09/639,307

Group: 1771

Filed: August 16, 2000

Examiner: Juska

For: REINFORCED FOAM BACKED CARPET

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**EVIDENTIARY DECLARATION OF EDOUARD A. BRODEUR, JR.**

I, EDOUARD A. BRODEUR, JR., one of the named inventors in the above-identified application, hereby state and declare as follows:

1. I have previously made an Evidentiary Declaration in application Serial No. 09/063,377, now U.S. Patent No. 6,162,309, issued December 19, 2000. A copy of the previously-executed Evidentiary Declaration is attached and the statements made in that Declaration, including my resume, are incorporated herein by reference.

2. I have reviewed U.S. Patent No. 5,567,497, issued to Zegler et al., which I understand forms the basis of a rejection of certain claims in the presently pending patent application. Zegler discloses a floor covering in tile or roll form, having a tufted primary carpet, a thermoplastic backing layer 34 and a contact layer 40. The contact layer 40 in Zegler includes a blowing agent which, when exposed to fusing temperatures, generates a gas which forms a contact layer of increased volume and lower density. By contacting the surface 40 and the carpet at fusing temperatures, the

contact layer foams and expands and is fused in its expanded foamed state to the carpet backing which, when returned to room temperature, causes differential expansion and contraction between the contact layer and the carpet backing. This *in situ* foaming results in doming or curling of the carpet tile.

3. To avoid the differential expansion and contraction effect in Zegler, the present applicants provide a preformed open-mesh fiber-reinforced foam layer with foam nodules which is adhered to the carpet backing at a lower-than-fusing temperature, e.g., at a temperature less than 100°F. This substantially eliminates any further expansion of the foam layer, thereby effectively eliminating stresses between the layers which otherwise, as in Zegler, would cause the carpet tile to curl and dome. The carpet roll or tile product produced by Zegler is thus different than the product of the present invention because the foam layer is applied to the carpet backing at a temperature lower than the Zegler fusing temperature, thus maintaining the foam nodules thereof substantially non-collapsed relative to their foamed state in the preformed foam layer. This minimizes or eliminates stresses between the carpet backing and foam layer and the resulting curling or doming effects, as in Zegler.

4. I understand that the Examiner has commented that applicants have not shown that the use of a "preformed foam layer produces a materially different final product than that of Zegler's in-situ foamed carpet." I also understand the Examiner has stated that my prior Declaration did not present factual or objective evidence in support of the conclusion that the Zegler product would have doming or curling effects.

5. Attached hereto as Exhibit A is a letter, together with five pages of an attachment, dated April 21, 1989 forwarded by Declarant to Mr. David Neuss of Einstein Moomjy Company of Pinebrook, New Jersey. The letter and attachment identifies the problem of curling or doming of tiles manufactured in accordance with the process disclosed in Figure 6 of Zegler. Prior to April 21, 1989, tiles manufactured by Collins & Aikman in accordance with its Zegler patent, particularly by the process illustrated in Figure 6, were installed by Einstein Moomjy in buildings occupied by IBM in Stamford, Connecticut. IBM later complained of a tile shrinkage problem. I was requested by Einstein Moomjy to identify the cause of shrinkage of the carpet tiles installed at the IBM buildings. Collins & Aikman (C&A), the tile manufacturer and owner of the Zegler patent, had claimed that the cause of the tile shrinkage was water extraction and the lack of a concrete sealer underlying the tiles.

6. Various samples of the carpet tile installed at the IBM buildings in Stamford were forwarded to me for testing, as noted on page 1 of the attachment to my April 21, 1989 letter. The sample tiles were made by C&A by a process by which the foamed scrim was laminated to the precoated carpet at hot melt (fusing) range temperatures with contact bonding between the surfaces. Initial measurements of the sample carpet tiles from the IBM installation and inventory samples demonstrated doming or curling effects. Various other tests were conducted on the samples. Section 5, page 4 of the attachment to my April 21, 1989 letter stated my conclusion at that time that the volumetrically expanded gas-filled foam applied to the carpet backing at high temperatures, i.e., 175 to 200°C, formed stresses on an otherwise non-stretchable

carpet backing *in situ*. Those stresses remained for an extended period of time and naturally drew the bottom of the carpet inward to produce the doming or curling effect.

7. Two strips of material used in the tests I conducted on the sample tiles from the IBM installation are attached. The first strip is from a complete carpet tile construction and the second strip comprises only the foam backing without the carpet and precoat. The strips were cut in identical lengths and widths. A comparison of the carpet strip with the foamed backing and the foam backing *per se* without the carpet backing reveals a shrinkage in both length and width directions of the latter strip. It is that shrinkage of the foam backing which causes doming or curling.

8. Further, one of the tests conducted on the IBM tiles was to score the tiles by cutting grooves through the backing up to the carpet backcoat (precoat). The scored tiles curled severely in an opposite direction to the non-scored tiles.

9. In addition, the scrim on which the thermoplastic foam coating is applied and expanded in the Zegler patent shrinks as well in response to application of heat at fusing temperatures. Shrinkages of up to 16 and 9.4% were observed in different directions. The tension contribution caused by these shrinkages, together with the shrinkage caused by the lower density gas-filled foam, caused the curling and doming effect.

10. The Zegler tiles manufactured in accordance with the Zegler process of Figure 6 are consequently a different product than the product of the present invention comprised of a preformed, open-mesh fiber-reinforced foam layer with foam nodules held in substantially intimate contact with the relatively smooth back face forming a

carpet tile substantially void of curling or doming because the stresses in the foam layer are not sufficient to cause curling or doming. The state (volume, density) of the foam nodules in the present carpet product corresponds substantially to the state of the foam nodules in the preformed open-mesh fiber-reinforced foam layer and hence does not induce stresses in the carpet product which would produce curling or doming.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 6/6/2003

  
EDOUARD A. BRODEUR, JR.